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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,301	09/25/2006	Christian Herbst-Dederichs	710270-040	6677
<div>7590 09/04/2007</div> <div>Robert L Stearns Dickinson Wright 38525 Woodward Avenue Bloomfield Hills, MI 48304-2970</div> <div>EXAMINER PICKARD, ALISON K</div> <div>ART UNIT PAPER NUMBER</div> <div>3673</div> <div>MAIL DATE DELIVERY MODE</div> <div>09/04/2007 PAPER</div>				

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,301

Applicant(s)

HERBST-DEDERICHS, CHRISTIAN

Examiner

Alison K. Pickard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 13-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13-15 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 57-46048.

JP '048 discloses a piston ring having at least one operating surface (near 6), an upper face 5 and a lower face 5. The surface has a flame sprayed layer (requiring it to be applied by HVOF is considered a process limitation in a product claim and is given little patentable weight). The upper and lower faces are at least partially trapezoidal in form due to portions 11. The faces have a chrome protective layer. It is not clear if JP '048 discloses that the surface roughness is in the range required by the claims. However, it is not considered inventive to discover the workable or optimum ranges by routine experimentation absent the showing of criticality for such ranges. See *In re Aller*, 105 USPQ 233, 235 (CCPA 1955).

3. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '048 as applied to claim 13 above, and further in view of Obara (2006/0040125).

JP '048 does not appear to disclose the layering is carbide materials. Obara teaches a piston ring with a wear-coating on an operating surface. Obara teaches using a carbide material, which can include the materials of claim 17 (see paragraph 33). This coating offers excellent wear resistance as well as scuffing and peeling resistance and can be applied by a flame spray

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technique (i.e. HVOF). The coating has a porosity of 8% or less, which would include 5% or less. It would have been obvious for one of ordinary skill in the art at the time the invention was made to use the carbide coating taught by Obara as the wear layer in JP '048 to provide excellent wear resistance as well as scuffing and peeling resistance.

4. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP '048 in view of Stong (RE39070).

JP '048 discloses a piston ring and a method of making the rings. As seen in figures 6 and 7, plural rings are stacked and a thermal sprayed material is applied to the operating surfaces (near 6 or 7). Part of the upper and lower surfaces of the rings is formed into a trapezoidal shape at 11 and a layer 5 is applied to these areas. It is not clear if the process is an HVOF process. Stong teaches art equivalent thermal spraying methods including HVOF (see col. 4, lines 35-38). It would have been obvious for one of ordinary skill in the art at the time the invention was made to use an HVOF method to apply the coating to the piston rings as such is a suitable method.

Regarding claims 24 and 25, it is unclear if JP '048 discloses such ranges. However, it is not considered inventive to discover the workable or optimum ranges by routine experimentation absent the showing of criticality for such ranges. See *In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to make the layers with the claimed porosity, roughness, and thickness.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Stong, for example, also teaches a carbide coating for wear resistance on piston

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rings. Also, Barbezat and Obara disclose some roughness ranges, although not given in terms of Rk.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alison K. Pickard whose telephone number is 571-272-7062.

The examiner can normally be reached on M-F (10-7:30), with alternate Friday's off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tricia Engle can be reached on 571-272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alison K. Pickard
Primary Examiner
Art Unit 3673

AP